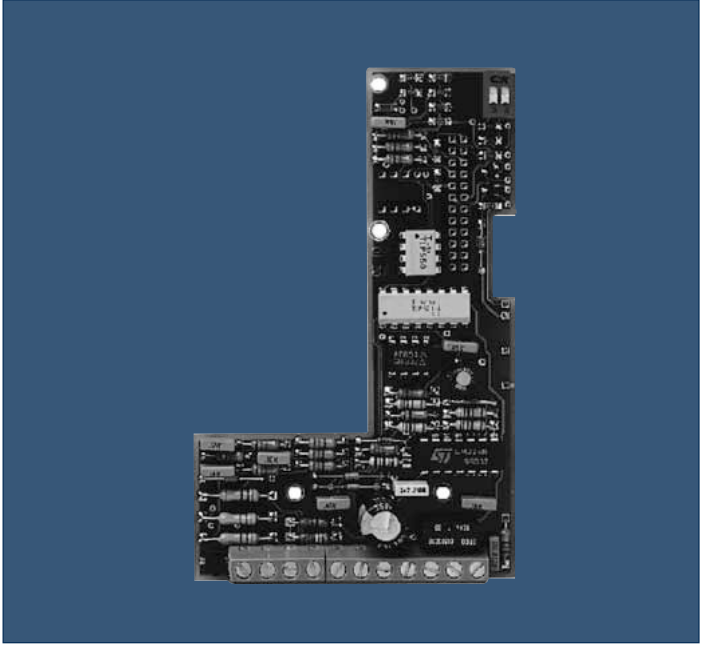


ALTIVAR® 16

Carte métier
Usage général, Usage manutention

Dedicated board
General use, Material handling

Anwendungsspezifische Optionkarte
Allgemeine Anwendungen, Fördertechnik

Carta aplicación
Uso general, Uso manutención

VW3-A16201

Guide d'exploitation
User's manual
Bedienungsanleitung
Guía de explotación

Telemecanique
GROUPE SCHNEIDER

Read this document carefully to achieve the optimum performance from the speed controller.

The descriptions and outline diagrams are intended for experienced personnel. Changing the adjustments or configuration of the speed controller will affect its functions and performance. Ensure that any modifications carried out do not expose personnel or the hardware to any risk.

In local control mode, check that the starting and stopping of the machine is not dangerous.

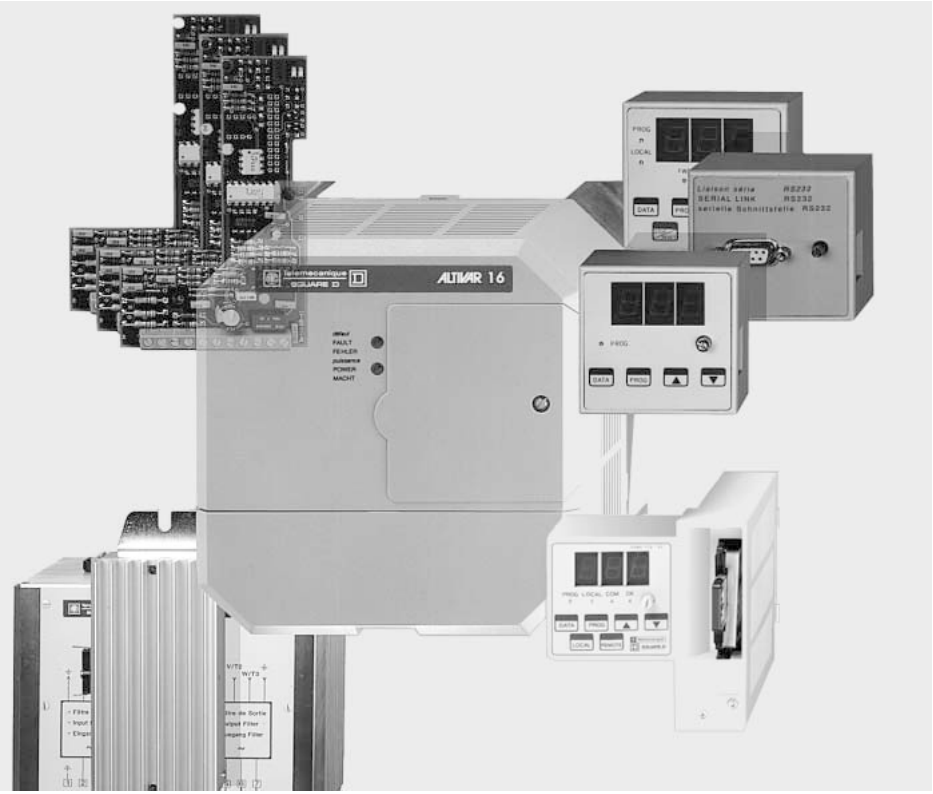
ATTENTION

Although every care has been taken in the preparation of this document, Schneider Electric SA cannot guarantee the contents and cannot be held responsible for any errors it may contain or for any damage which may result from its use or application.

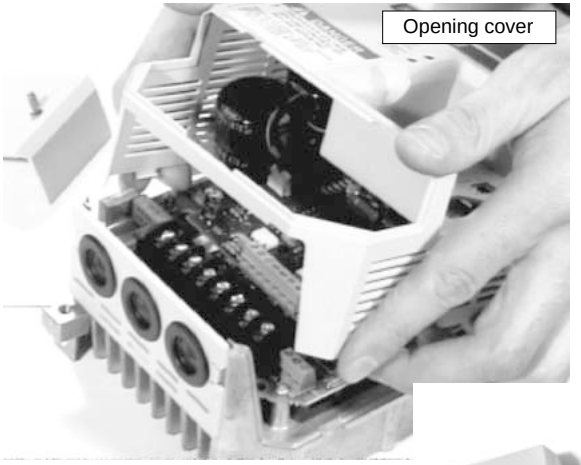
The products and options described in this document may be changed or modified at any time, either from a technical point of view or in the way they are operated. Their description can in no way be considered contractual.

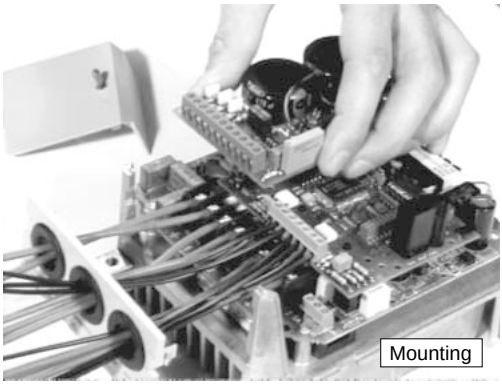
NOTE

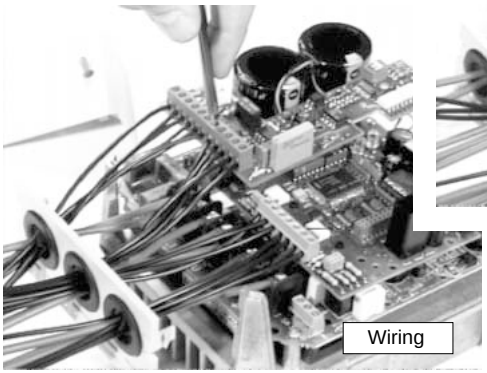
Contents

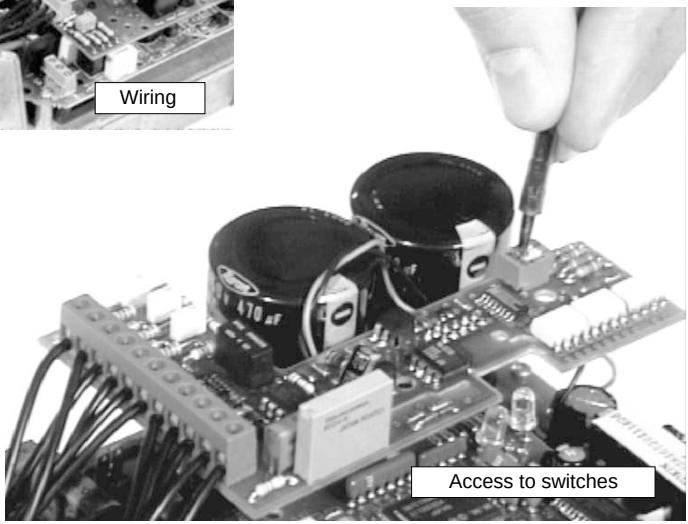


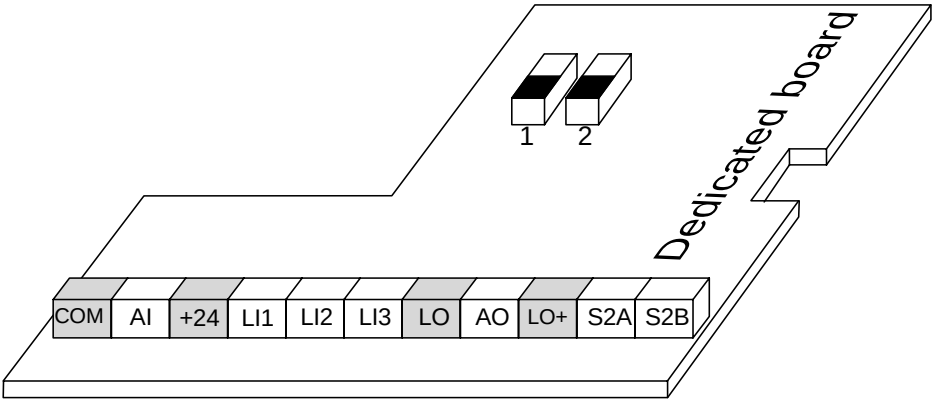
A wide range of options and accessories is available for the Altivar 16, to meet the needs of various applications.


Opening cover


Mounting


Wiring


Access to switches

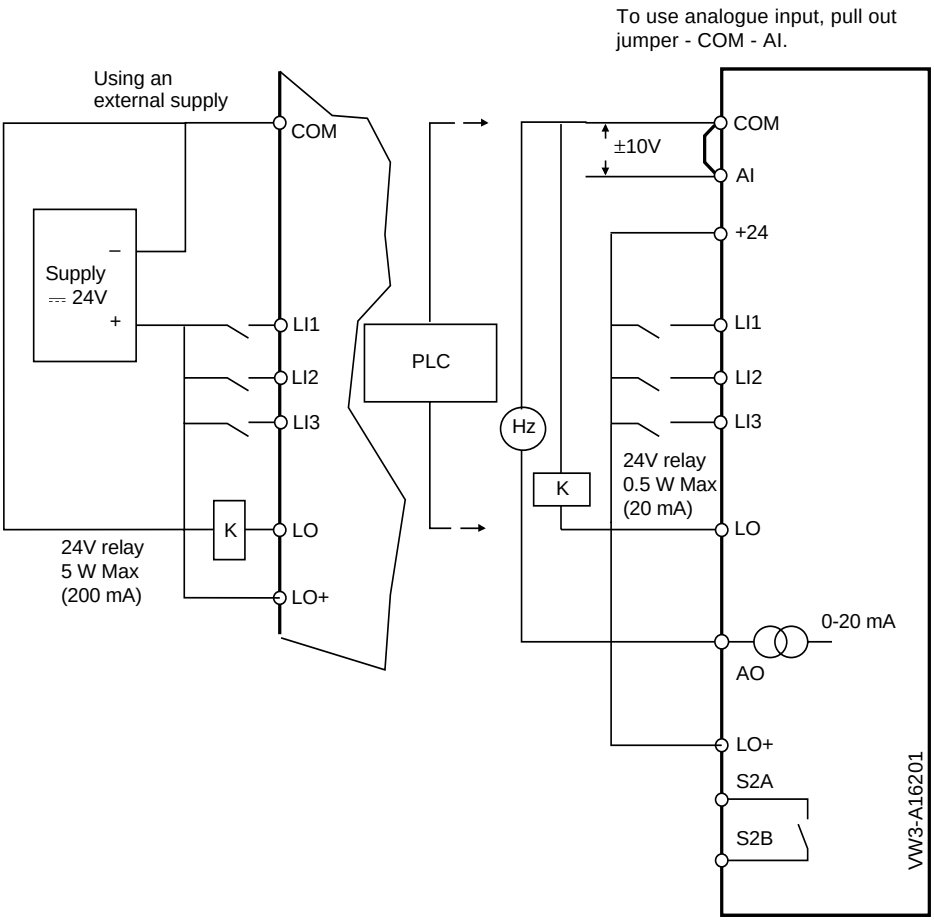


ENGLISH

Terminal label	Function	Characteristics	Terminal capacity mm^2
COM	Common for logic and analogue I/O	0 Volt	1.5
AI	Analogue input	Resolution 10 bits ± 10 V Z = 40 kΩ	1.5
+24		⎓ 24 V	1.5
LI1	Logic input	Rated : 24 V - 16.5 mA state 1 : U > 11 V - I > 6 mA state 0 : U ≤ 5 V - I ≤ 2.5 mA Z = 1.5 kΩ	1.5
LI2	Logic input		
LI3	Logic input		
LO	Logic output	PLC compatible open collector Max : ⎓ 24V - 200 mA. Max flow 20 mA if connected to +24V of internal source	1.5
AO	Analogue output	0 - 20 mA (500 Ω - 10 V) Resolution 8 bits	1.5
LO+	Supply for logic output	Internal 24 V - 20 mA External 24 V - 200 mA	1.5
S2A	N/O volt free contact	min : 10 mA - ⎓ 1 V max : 1A - ∿ 250 V and ⎓ 30 V of inductive load	1.5
S2B			

The I/O are electrically isolated.

Connection diagram



ENGLISH

To avoid interference in the unit it is recommended that you :

- separate the control circuits and the power circuits.

- use a twisted pair cable for the control circuits, with a pitch of 25 to 50 mm, or a shielded twisted pair cable.

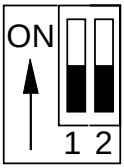
Precautions

General use (switch n°1 in lower position)

I/O automatic configuration

(switch n°2 in lower position)

- automatic assignment of I/O on the board, by basic speed controller, with or without display option.
- I/O cannot be reconfigured (see page 26).
- immediate restart after changing basic speed controller.



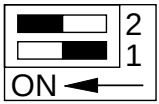
Dedicated board switches (initial factory setting).

S2A.S2B	Frequency reference reached
AO	Motor frequency
LO	100% thermal state reached
LI3	JOG (5 Hz)
LI2	Freewheel stop
LI1	Fault reset
AI	Ref. 2 input summed with AIV

Terminal label

General use

Additional functions with display and adjustment options

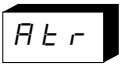


Required switch position for the display and adjustment options VW3-A16101 and VW3-A16102 used for modifying the following functions :

Adjustable function

Step by step operation : using the commands LI3 and FW or RV
Acceleration and deceleration ramps = 0.1 s.
Frequency from 0.1 to 10 Hz (5 Hz on basic unit).

Configurable functions



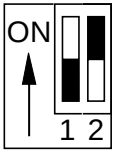
Automatic restart : function enabling the speed controller to restart following a fault but only after the fault has cleared.
Factory setting NO / YES.

Catching a spinning load : restart the speed controller following a break in the supply. If the speed reference signal and confirmation of the start command have been maintained, the motor accelerates up to its initial speed without resetting the acceleration ramp.
Factory setting NO / YES.

ENGLISH

General use

I/O reconfiguration using a PC



Switch 2 :

Position required for reconfiguring the I/O and their function (component panel).

S2A - S2B	100% thermal state reached	Frequency reference reached				
AO	Motor frequency	Motor current				
LO	100% thermal state reached	Frequency reference	I Limitation reached	LSP reached	HSP reached	Overload 1.1 I t h reached
LI3	4th speed	Fault reset	Freewheel stop	Switching between 2 ramps	I limitation reduction	JOG (5 Hz)
LI2	3rd speed	Reset fault	Freewheel stop	Switching between 2 ramps	I limitation reduction	JOG (0.1 to 10 Hz)
LI1	Start / stop	Reset fault	Freewheel stop	Switching between 2 ramps	I limitation reduction	JOG (0.1 to 10 Hz)
AI	Speed feedback	Ref. 2 input summed with AIV	PI feedback *			

Terminal label

Factory configuration

- When starting, after changing the basic speed controller or when first reconfiguring the dedicated board I/O, if the red fault LED is flashing or the code O P t appears on the display option, the dedicated board I/O should be reassigned.

* This function is available from version 1.5 of the setup software onwards.

General use

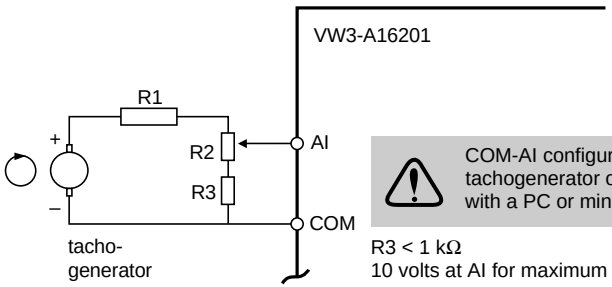
Additional functions available with a PC

Configurable functions

d.c. injection	:	no / f ≤ 0.1 Hz / f < LSP
Controlled stop on supply break	:	yes/ no
Ramp	:	linear / S
Adjustable current limitation	:	adjustable and controlled by LI
Speed regulated by isolated tachogenerator	:	divider bridge external to the unit, see diagram below

Adjustable functions

Speed loop gain	:	0 to 100 (33)
Slip compensation	:	0 to 5 Hz
3rd speed	:	LSP to HSP
4th speed	:	LSP to HSP
2nd acceleration ramp	:	0.1 to 600 s
2nd deceleration ramp	:	0.1 to 600 s
Current limitation	:	0.45 to 1.36 In speed controller
Automatic d.c. injection	:	level : 0.5 to 1.5 [ItH] time : 0 to 5 s then permanent [dCb]
Switching frequency	:	5 / 10 kHz
Proportional gain	:	0 to 100,00 (1,00)
Integral gain	:	0 to 100,00 (1,00)



COM-AI configuration with tachogenerator only possible with a PC or mini console.

R3 < 1 kΩ
10 volts at AI for maximum speed.

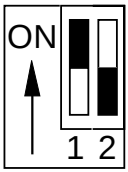
ENGLISH

Material handling (switch n°1 in upper position)

Automatic I/O configuration

(switch n°2 in lower position)

- automatic assignment of I/O on the board, with basic speed controller, with or without display option.
- I/O cannot be reconfigured (see page 30).
- immediate restart after changing basic speed controller.



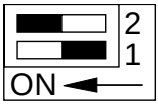
Dedicated board switches

Terminal label	
S2A.S2B	Brake control *
AO	Motor frequency
LO	I limitation reached
LI3	4th speed (25 Hz)
LI2	3rd speed (5 Hz)
LI1	Reset Fault
AI	Ref. 2 input summed with AIV

* Braking logic
- current level [IbR] = 0
- f reference level = 0.

Material handling

Additional functions with display and adjustment options



Required switch position for the display and adjustment options VW3-A16101 and VW3-A16102 used for modifying the following functions :

Adjustable functions

3rd speed : adjustment of the 3rd frequency reference from LSP to HSP. Validated by terminal LI2 and FW or RV.
Factory setting : 5 Hz.

4th speed : adjustment of the 4th frequency reference from LSP to HSP. Validated by terminal LI3 and FW or RV.
Factory setting : 25 Hz.

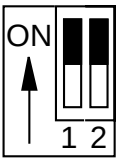
Brake release current threshold : adjustment of current threshold enabling activation of speed controller braking release, from 0 to 1.05 In. The braking logic threshold depends on the adjustment of [LSP] (low speed).
Factory setting : 0.

Configurable function

Controlled stop on power break : control of motor stop on power break, following a self-regulating ramp as a function of restored kinetic energy.
Factory setting : [NO] / YES.

Material handling use

I/O reconfiguration using a PC



Switch 2 :

Required position for reconfiguring the I/O and their function (component panel).

S2A - S2B	Braking control					
AO	Motor frequency	Motor current				
LO	I limitation reached	LSP reached	Overload 1.1 tH reached			
LI3	4th speed (25 Hz)	Fast stop	Fault reset	Switching on 2 ramps	Motor power change	
LI2	3rd speed (5 Hz)	Fast stop	Fault reset	slower	Switching on 2 ramps	Motor power change
LI1	Start / stop	Fast stop	Fault reset	faster	Switching on 2 ramps	Motor power change
AI	Speed feedback	Speed feed-back + back-stop control	Ref. 2 input summed with AIV			

Terminal label

Factory configuration

- When starting, after changing the basic speed controller or when first reconfiguring the dedicated board I/O, if the red fault LED is blinking or the code OPt is displayed on the display option, the dedicated board I/O should be reassigned.

Material handling use

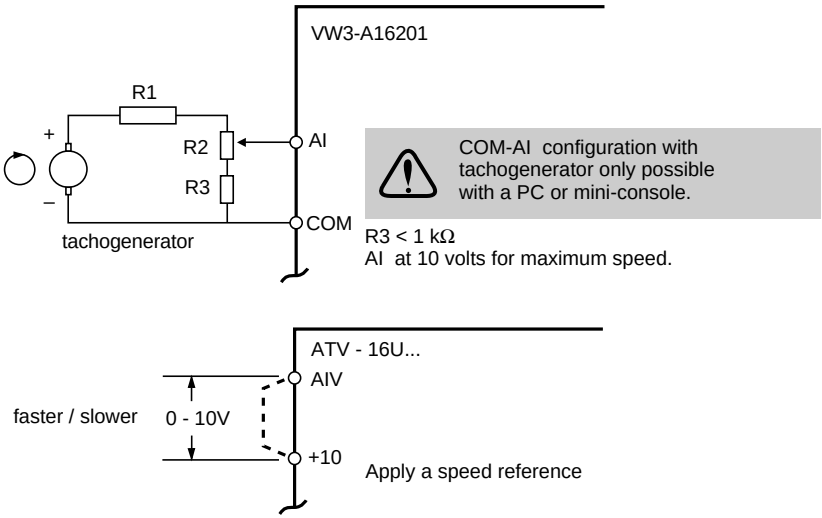
Additional functions available with a PC

Configuration functions

Faster / slower	:	frequency memorization no - RAM - EEPROM
Automatic d.c. injection	:	no / f < brake release frequency threshold
Ramps	:	linear / S
Anti-backstop control	:	yes/ no depending on AI
Fast stop	:	yes / no

Adjustment functions

Speed loop gain	:	0 to 100 (33)
2nd acceleration ramp	:	0.1 to 600 s
2nd acceleration ramp	:	0.1 to 600 s
Automatic d.c. injection	:	level : 0.5 to 1.5 IEH time : 0 to 5 s
Change of motor power	:	1 to 1/5 Pn
Slip compensation	:	0 to 5 Hz
Braking logic :		
Engage frequency threshold	:	0 to LSP
Release frequency threshold	:	0 to LSP
Release delay time	:	0 to 5 s



Red LED blinking on basic unit, or code OPE indicates that I/O should be reassigned or that switch n°2 on the dedicated board should be switched to off (lower position).

SPF

Speed control fault : incorrect adjustment of tachogenerator feedback.

Machine overload, over speed, speed error.

SPF.

No tachogenerator signal.

- Product designation	Product reference	Document reference	Document number
- Speed controller	ATV-16	VD0C01Q301	N° 52533
- Adjustment and display	VW3-A16101	VD0C01Q302	N° 52534
- Local control adjustment and display	VW3-A16102	VD0C01Q302	N° 52534
- Remote display option	VW3-A16103	VD0C01N901	N° 99471
- PC connection	VW3-A16104	VD0C01N902	N° 99488
- Braking module	VW3-A16601	VD0C01N906	N° 99474
- Braking resistance	VW3-A16701-04	VD0C01N907	N° 99475
- Attenuating filters	VW3-A16401-07	VD0C01N904	N° 99472
- Inductances	VW3-A16501-04	VD0C01N905	N° 99473
- IP 54	VW3-A16801-02	VD0C01N908	N° 99476

- SERIAL LINK CONNECTION OPTIONS

– Interface for PCMCIA communication card	VW3-A16303	VD0C01B320	N° 62821
– PCMCIA card for UNITELWAY, MODBUS, JBUS, SY/MAX PNIM protocol	VW3-A66301		
– User's manual : PCMCIA communication card protocols UNITELWAY, MODBUS, JBUS		VD0C01B311	N° 54749
– FIPIO protocol kit which includes :	TSX FPV16 V6M		
• two diskettes for integration under XTEL-CONF,	TXT L FPV16V5		
• an installation manual for the ATV16 on FIPIO		TSX DM FPV16V6M	N° 56698
• a PCMCIA communication card	TSX FPP 10		
• a junction box	TSX FP ACC4		

- DEDICATED BOARDS

- General usage/material handling	VW3-A16201	VD0C01Q303	N° 52553
- Variable torque	VW3-A16202	VD0C01Q304	N° 52554
- High speed motors	VW3-A16203	VD0C01Q305	N° 52555